BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Subsidiary Diploma in Applied Science Pearson BTEC International Level 3 Foundation Diploma in Applied Science Pearson BTEC International Level 3 Diploma in Applied Science Pearson BTEC International Level 3 Diploma in Biomedical Science Pearson BTEC International Level 3 Diploma in Environmental Science Pearson BTEC International Level 3 Extended Diploma in Applied Science Pearson BTEC International Level 3 Extended Diploma in Biomedical Science Pearson BTEC International Level 3 Extended Diploma in Environmental Science
Unit number and title	**Unit 19: Microbiology and Microbiological Techniques**
Learning aims	**A**: Understand the importance of microbial classification to medicine and industry. **B:** Undertake microscopy for specimen examination in laboratories
Assignment title	**Classification of microorganisms**
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You have secured a work experience placement with a Scientific Research facility where you will gain an insight into their work in the study of microbiota and pathogen biology. You will have the opportunity to study the structural characteristics of microorganisms using a range of microscopy techniques. On completion of your placement, you are expected to demonstrate the knowledge you have gained by writing a project report.

Task 1	Produce a detailed report that **evaluates, compares, explains** and **illustrates** the structures and characteristics of at least **four** different microorganisms and the types of microscopy used to observe the structures of these microorganisms. • Follow instructions to **independently set up a light microscope** and calibrate the eyepiece graticule. Use different magnifications (including an oil immersion lens) to view a variety of microorganisms. Use your own observations and electron micrographs (from SEMs and TEMs) to **produce accurate drawings** annotated to describe the structures of four types of microorganism. Illustrations must be labelled to show the type of microscope and magnification used and

	calculations of the actual size of the structures viewed. • **Compare** the similarities and differences, in the size, structure and reproduction, used in the classification of microorganisms. Explain the reasons why each microorganism is classified as it is and the importance of classification in medicine and industry. **Include a comparison of how using two different types of microscopes** is important and helpful when viewing the structure of microorganisms. • Give at least four examples **explaining** how and why **four** different microorganisms (from bacteria, fungi, viruses, protozoans, prions and viroids) are placed into a specific classification and why the classification is important to medicine and industry. • In your final report, you must demonstrate that you have studied a range of microorganisms using various microscopy techniques including light microscopy (dissecting and compound), phase contrast microscopy and micrographs generated from scanning and transmission electron microscopes (SEMs and TEMs). Your report must evaluate the practical work and include the uses of different microscopes and lenses (including oil immersion) and the importance of magnification and resolution in gaining an accurate view of specimens. Use your observations to **evaluate** the advantages and limitations of these different microscopy techniques when used to observe microscopic structures in medicine and industry. Give arguments/reasons and an evaluation for the placement of at least four microorganisms and infectious agents in their respective groups.
Checklist of evidence required	A project report that includes: • An evaluation of different microscopy techniques used to observe the structures of microorganisms in order to classify them. • A comparison of the characteristics used to classify microorganisms and the different microscopy techniques used to observe microscopic structures. • An explanation of how the structures and characteristics of microorganisms are used to classify them. • Annotated illustrations of at least four microorganisms as viewed using light microscopy, oil immersion and electron micrographs. • You must demonstrate the ability to follow the protocol provided by your tutor to set up and use a light microscope accurately. The evidence you provide must include details of the observations carried out. • Further evidence of your ability to set up and use a light microscope skilfully should be provided through an observation record completed by your Assessor.
Criteria covered by this task:	

Pearson BTEC

Unit/Criteria reference	To achieve the criteria, you must show that you are able to:
AB. D1	Evaluate the use of microscopy techniques to observe structures and classify microorganisms.
A. M1	Compare the characteristics of microorganisms used for classification.
B. M2	Compare the use of different microscopy techniques to observe the structures of microorganisms.
A. P1	Explain how the structures and characteristics of microorganisms are used to classify them.
B. P2	Correctly set up and use a light microscope and oil immersion lens to observe structures of microorganisms under magnification.
B. P3	Illustrate, with accuracy, the structures of microorganisms observed using a light microscope and an oil immersion lens.

Sources of information to support you with this Assignment	http://www.cleapss.org.uk/attachments/article/0/SSS01.pdf?Secondary/Science/Student%20Safety%20Sheets/ http://www.microbiologyonline.org.uk/teachers/observing-microbes http://www.microbiologyonline.org.uk/teachers/microscopes http://needtoknow.nas.edu/id/infection/microbe-types/